SK-VET
Weighing Scale

Service Manual

TABLE OF CONTENTS

BEFORE USING THE SCALE

Thank you for purchasing an EXCELL Electronic Digital Scale. In order to use the scale properly, please read this User Manual carefully before use. If you have a problem concerning the scale, please contact your supplier.

1. Please keep scale in a cool and dry place. Do not store at high temperatures.
2. Do not allow any liquids to come into or contact with the scale. If it is happened, wipe the scale dry with a cloth.
3. Avoid objects impacting with the scale. Do not drop loads onto the scale or subject the weigh pan to any strong shock loads.
4. The load placed on the weigh pan must not exceed the maximum weighing capacity of the scale.
5. If the scale is not going to be used for some time, please clean it and store it in a plastic bag in dry conditions. A desiccant sachet may be included to prevent moisture build up.
6. Do not mix different types of dry battery or mix used dry batteries with new dry batteries.

SAFTY INSTRUCTIONS

1. Please confirm that the electrodes “+”、“-” are on the right position.
2. To avoid the electric leakage, please do not place the battery in high temperature, or try to disassemble it.
3. Please do not mix different type of dry cells。
4. Please do not use new and old dry cells at the same time.
5. Please do not leave the empty dry cells in the scale.

PREPARING TO USE THE SCALE

1. For accurate weight readings locate the scale on a firm level surface free from vibrations.
2. Avoid operating the scale in direct sunlight or drafts of any kind.
3. Remove any weight that might be on the weigh pan before the scale is switched on and avoid leaving weight on the pan for long periods of time.
4. Once the scale has been switched on, it will go through a LCD display test and then re-zero to be ready for use.
5. The scale requires 15~20 minutes warming up the machine before operation to ensure best accuracy.
6. Please note when  symbol appears on the screen, the dry batteries need to be replaced.
7. All goods weighed should be placed in the centre of the weigh pan for accurate weighing. The overall dimensions of the goods being weighed should not exceed the dimension of the weigh pan.

CHAPTER 1 FEATURES AND SPECIFICATIONS

Features:

- **Multi-function operation:** Fast weighing operation; Full range tare; Auto power-off; Weight hold feature.
- **Dual-weighing units:** Pound (lb) and kilogram (kg).
- **User-friendly design:** Auto calibration; Large LCD display (digit height 12mm x 25mm); Gravity compensation; Low battery warning indicator; Double over-load protection.
- **Dual-power source:** The power source can either be from AC / DC or dry batteries.

Option:

- LED display backlight

Specifications:

Model	Capacity	Min. Cap.	Division	Resolution
SK-VET-150	**150kg**	**1kg**	**50g**	**1/3000**
SK-VET-300	**300kg**	**2kg**	**100g**	**1/3000**
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)			
Power Source	4 x AAA dry battery or AC mains adaptor DC 9V			
Weight pan Size	570 x 900 mm (Iron platter)			

Product Package:

- Scale 1 off
- AC adapter 1 off
- User manual 1 off
- Please contact to your supplier, if any of the items described above is missing.
- Dry batteries are not included in the product package.

Selectable Weight Units and Piece Unit:

Kilogram	(kg)	1 g = 0.001 kg
Gram	(g)	1 g = 1 g
Pound	(lb)	1 g = 0.002204623 lb
Pound/Ounce	(lb, oz)	1 g = 0.03527396 oz
Ounce	(oz)	1 g = 0.03527396 oz

Error Messages:

E0 ⇒ The EEPROM memory is not working correctly.

E 1 ⇒ Zero is higher than the zero range when switching the scale on.

E2 ⇒ Zero is lower than the zero range when switching the scale on.

E4 ⇒ A/D value is unstable. When switching the scale on or pressing the **ON/ZERO** key or the **TARE** key, the A/D value is unstable for at least 20 seconds.

E5 ⇒ A/D value is less than -31250.

E9 ⇒ A/D IC malfunction (cannot read A/D value). The load cell may not be connected to the scale correctly.

oF ⇒ A/D value is higher than +31250.

oL ⇒ The weight of the object is over the maximum capacity + 9 divisions.

ErrC ⇒ After calibration the displayed resolution is greater than the internal resolution.

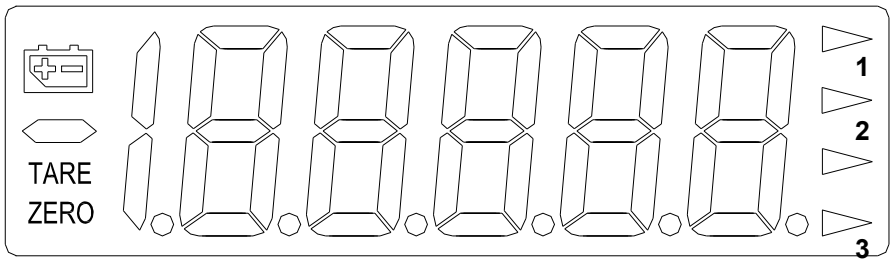
ErrG ⇒ The gravity value is outside the range 9.772 ~ 9.829.

Err5 ⇒ Error setting.

----H ⇒ The weight value is greater than the zero range, when re-zeroing the scale.

----L ⇒ The weight value is below the zero range, when re-zeroing the scale.

CHAPTER 2 DISPLAY



TARE: “Tare” indication.

ZERO: “Zero” indication.

► **1:** Kilogram (kg), the 1st unit indication.

► **2:** Pound (lb), the 2nd unit indication.

► **3:** Hold mode indication.

 **:** “Low Battery” indication.

CHAPTER 3 KEYBOARD FUNCTION

1. 

: The key to switch the scale off.

2. 

: ON/ZERO key. When the scale is off, press the key to switch it on. When the scale is switched on, with the weigh pan empty, if the display is not showing zero, press this key to zero (balance) the scale.

   - Zero range: ± 2% of full scale.

3. 

: TARE key. Press the key to deduct the weight of the container.

   - The tare key is not functional when the weight value shown on the display is negative or over the full scale capacity.

4. 

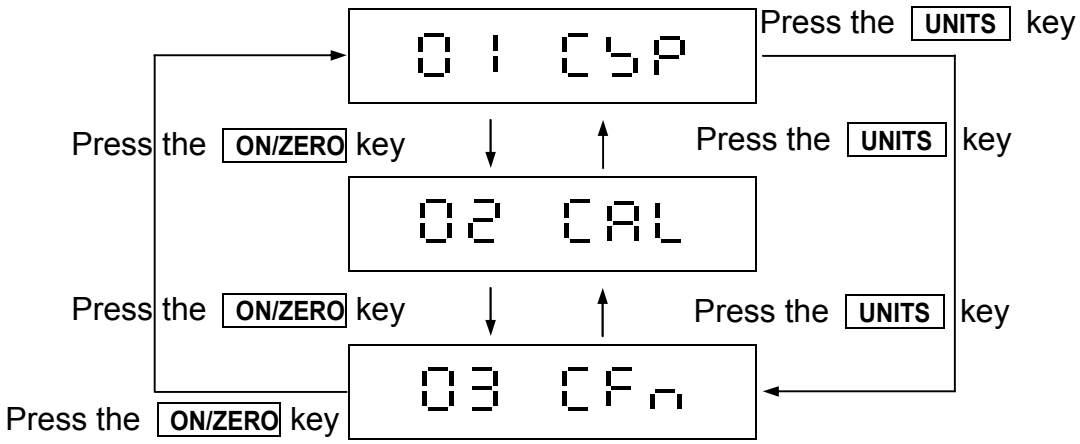
: Units key. Press the key to select the desired weight unit.

5. 

: Shift between the normal weighing mode and the Animal Weight Hold mode.

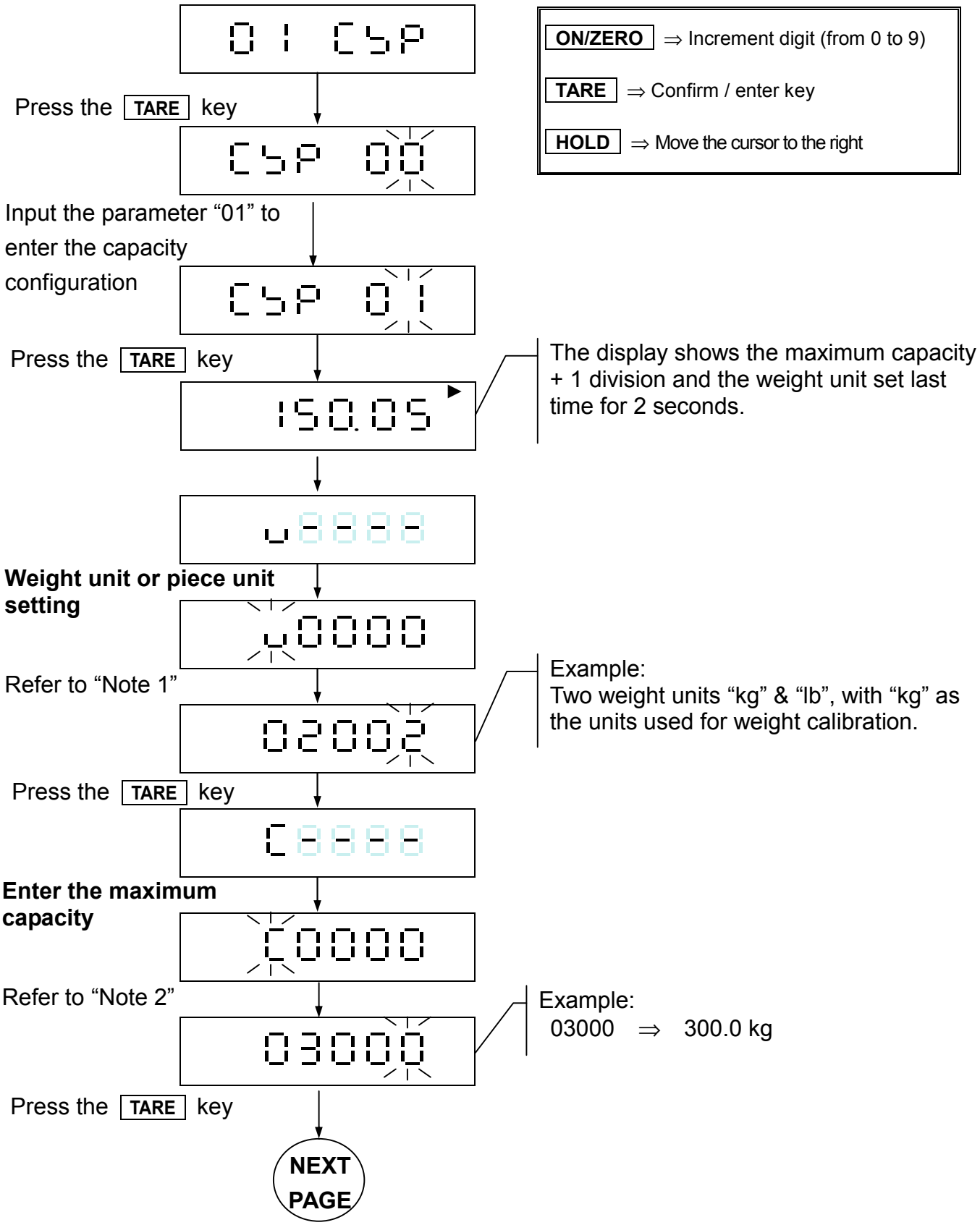
CHAPTER 4 SERVICE MODE ACCESS

- Set the jumper SWA1 on the main board to the ADJ position (EEPROM UNLOCKED). Press and hold the **TARE** key, followed by pressing the **ON/ZERO** key. Release the **ON/ZERO** key first and then the **TARE** key to enter the service mode; the display shows 01 CAP.
- Set the SWA1 jumper back to the LOCK position when service configuration is completed.
- If the SWA1 jumper is set to its LOCK position during calibration, the scale exits the service mode automatically.

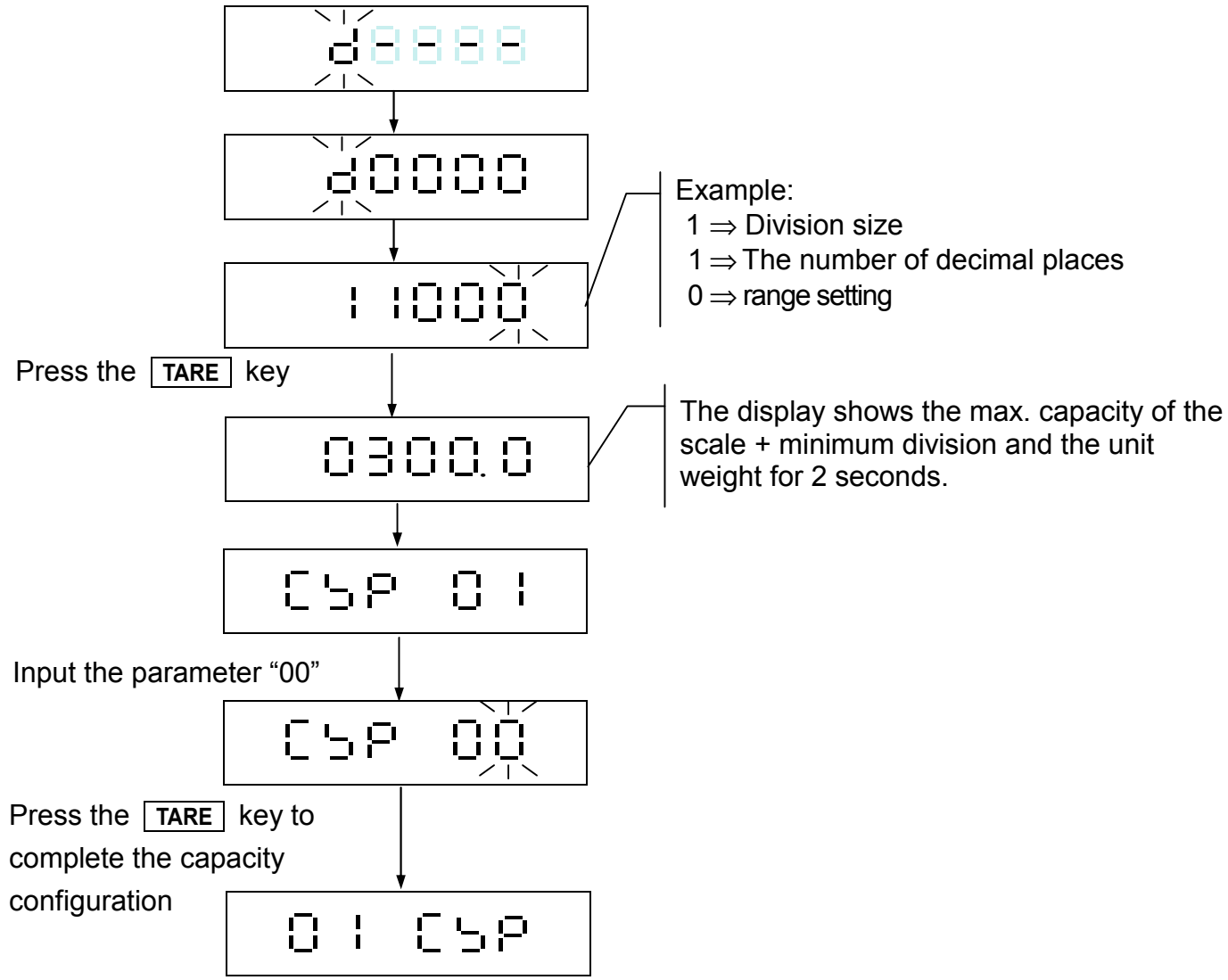


01 CAP	⇒	Capacity Configuration
02 CAL	⇒	Weight Calibration
03 CFn	⇒	Function Settings

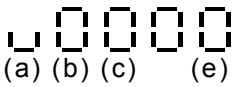
4-1. Capacity Configuration 01 CAP



Refer to “Note 3”



NOTE 1 The users can set up the different weight units in various orders according to their preference, and the amount of the chosen weight units can be up to 4.



(a) ⇒ The first weight unit (only "kg", or "lb" are available to choose from).
(b) ⇒ The second weight unit (select one of the parameters listed below).
(c) ⇒ The third weight unit (select one of the parameters listed below).
(e) ⇒ The amount of the weight units selected (select one of parameters 1 ~ 3).

Parameter descriptions:

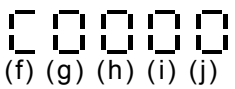
0 ⇒ kg	2 ⇒ lb	5 ⇒ oz
1 ⇒ g	4 ⇒ lb / oz	

Hints and Tips:

Ø When the first unit is set to lb, the second unit will be kg or g.

For example:
Select two weight unit kg and lb. when choosing kg as calibration weight unit, please input 02002

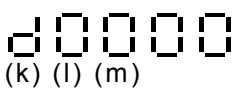
NOTE 2 Enter the maximum capacity of the scale, total 5 digits



For example:

300.0 kg ⇒ Key in 03000

NOTE 3 Set the division size and decimal point position to determine the display resolution



(k) ⇒ Division size (select 1, 2, or 5)

(l) ⇒ The number of decimal places (0 ~ 5)

For example:

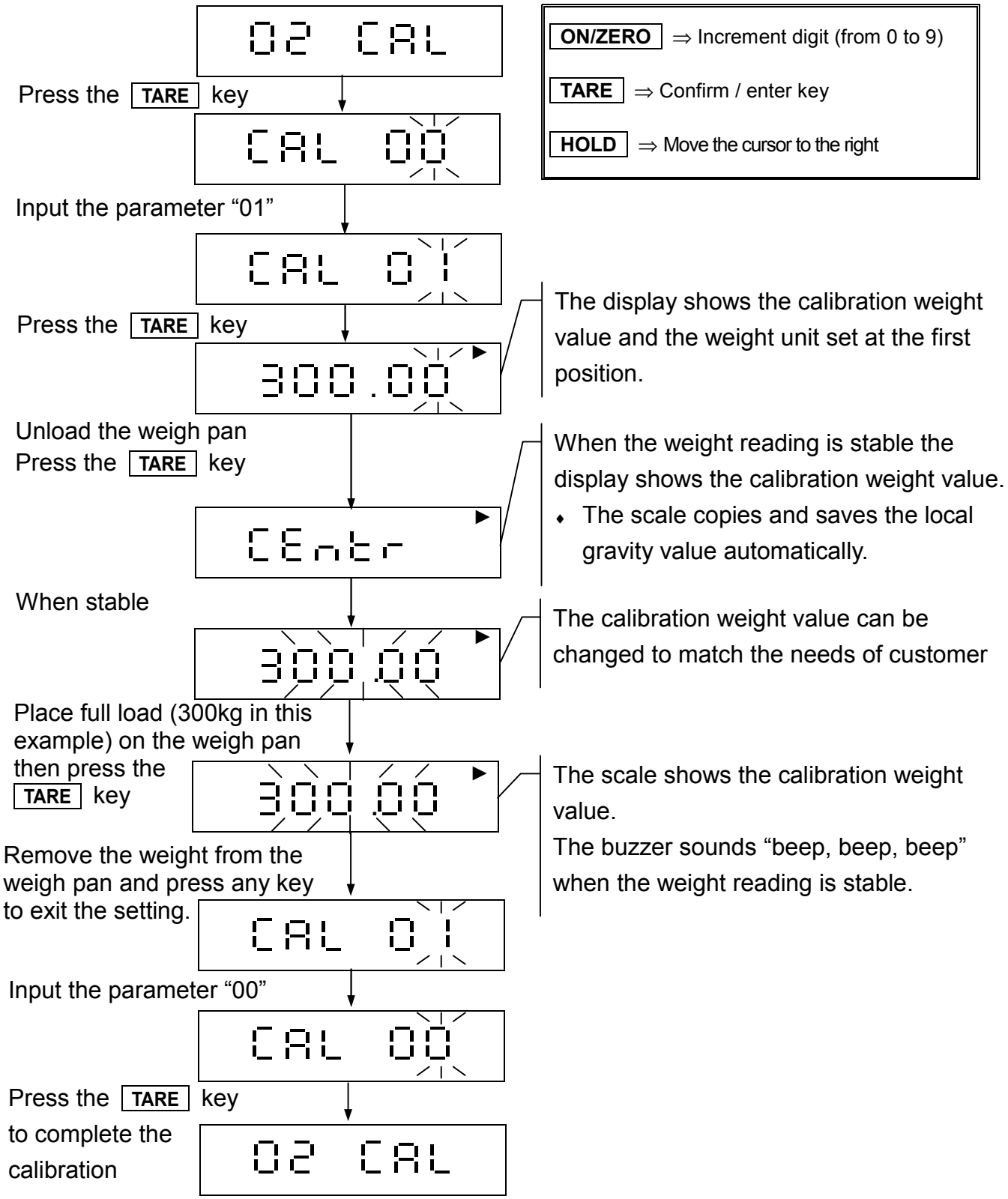
15.000 kg ⇒ enter 3
1500.0 g ⇒ enter 1

(m) ⇒ range setting (select one of parameters 0, 1, or 2)

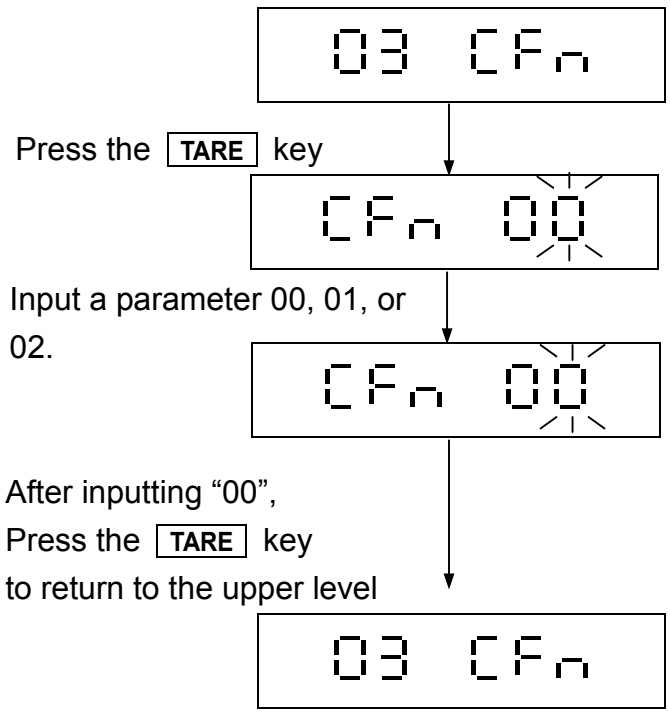
For example:

0 &1 ⇒ full range, 2 ⇒ dual range (divided at 1/2 of the full scale)

4-2. Weight Calibration 02 CAL



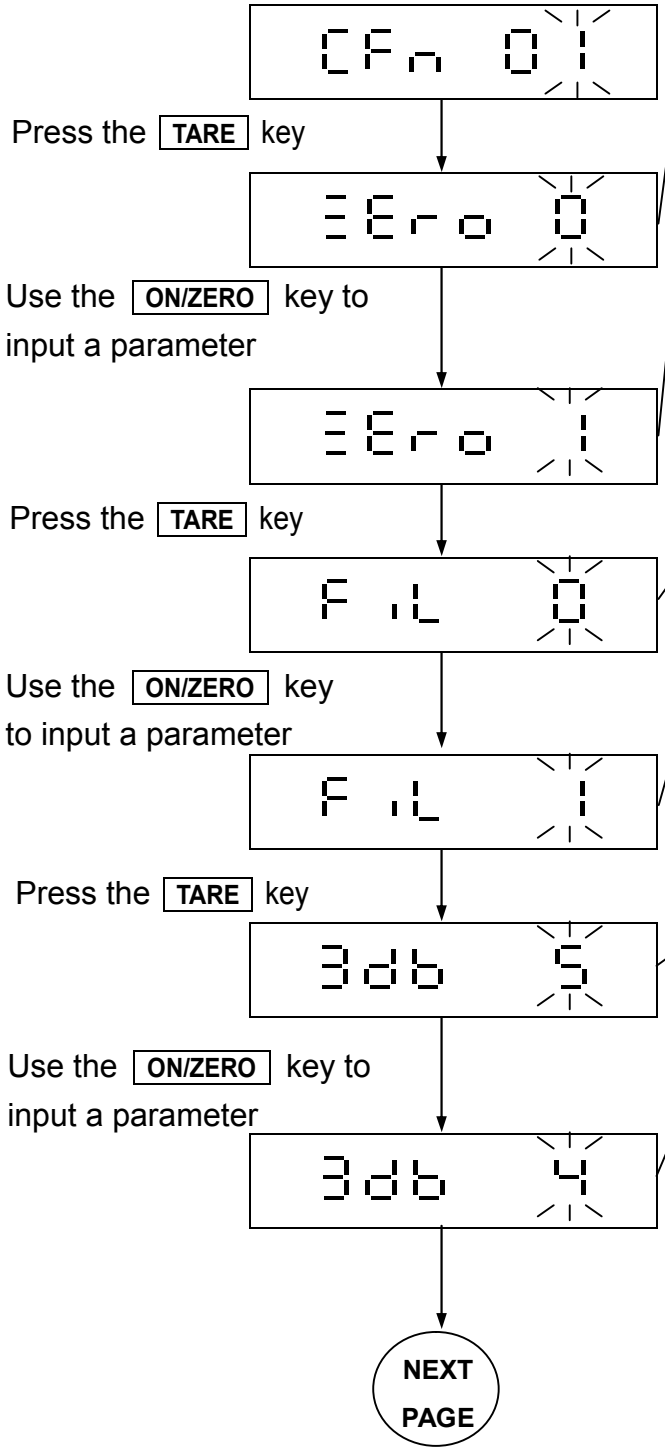
4-3. Function Settings 03 CFn



ON/ZERO	⇒ Increment digit (from 0 to 9)
TARE	⇒ Confirm / enter key
HOLD	⇒ Move the cursor to the right

CFn 00	⇒	Return to the upper menu level
CFn 01	⇒	Environment settings
CFn 02	⇒	Buzzer type

4-3-1 Environment Settings CFn 01



Returning to zero point setting

Displays the current setting

Returning to zero point setting

Use the **ON/ZERO** key to input a parameter

Default setting = 0

0 ⇒ show all	5 ⇒ cover 5 d
1 ⇒ cover 1 d	6 ⇒ cover 6 d
2 ⇒ cover 2 d	7 ⇒ cover 7 d
3 ⇒ cover 3 d	8 ⇒ cover 8 d
4 ⇒ cover 4 d	9 ⇒ cover 9 d

- The function is active when the weight value is over **1/3 of full capacity**

Digital switch &stable range parameter setting

Displays the current setting

Digital switch &stable range parameter setting

Use the **ON/ZERO** key to input a parameter

Default setting = 0

Parameter 0 ~ 9 ,

The greater the figure, the more stable the displayed weight will be

Filter parameter setting

Displays the current setting

Filter parameter setting

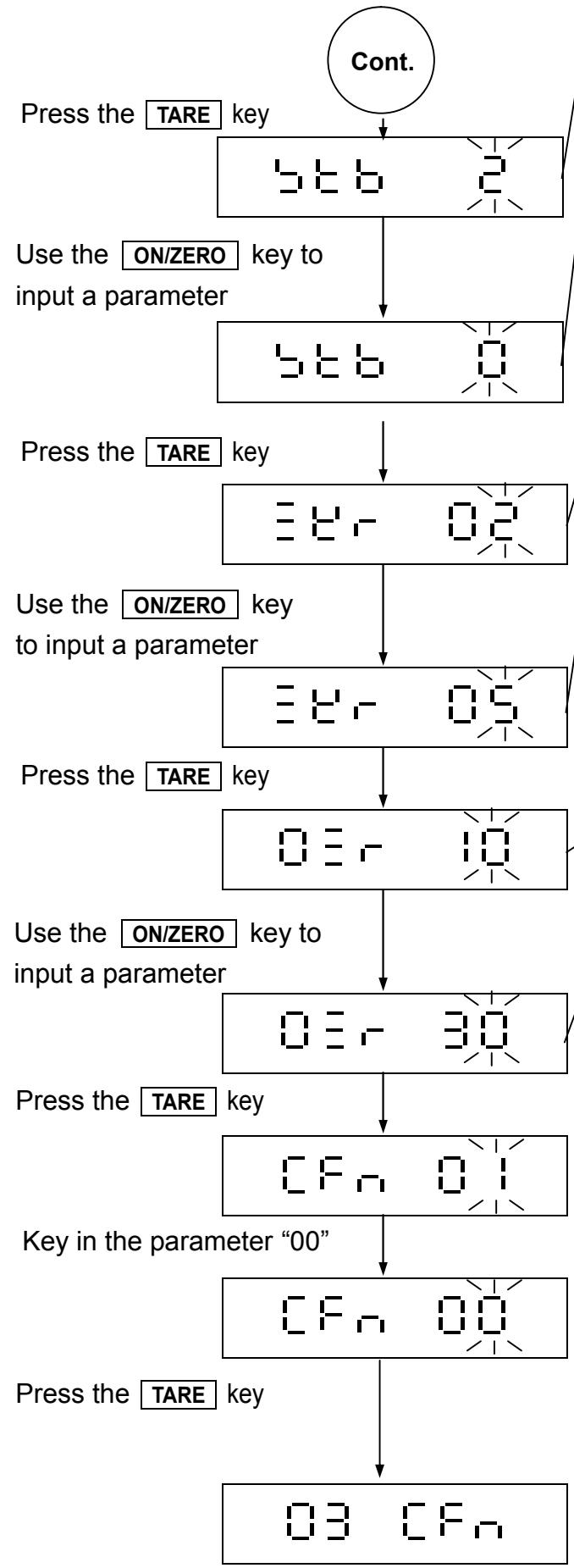
Use the **ON/ZERO** key to input a parameter

Default setting = 5

Parameter 0 ~ 9,

The greater the figure, the faster the filter will react. Consequently, the weight may be less stable.

ON/ZERO	⇒ Increment digit (from 0 to 9)
TARE	⇒ Confirm / enter key
HOLD	⇒ Move the cursor to the right



Stable range parameter setting

The display shows the current setting.

Stable range parameter setting

Use the **ON/ZERO** key to input a parameter

Default setting = 1

0 ⇒ No limitation
1 ⇒ Less than 1/4 division/sec
2 ⇒ Less than 1/2 division/sec
3 ⇒ Less than 2/3 division/sec
4 ⇒ Less than 1 division/sec

Re-zero range setting

The display shows the current setting

Re-zero range setting

Use the **ON/ZERO** key to input a parameter

Default setting = 02

00 ⇒ No limitation
01 ⇒ ±1%
02 ⇒ ±2%
⋮
15 ⇒ ±15%

Zero range setting

The display shows the current setting

Zero range setting

Use the **ON/ZERO** key to input a parameter

Default setting = 20

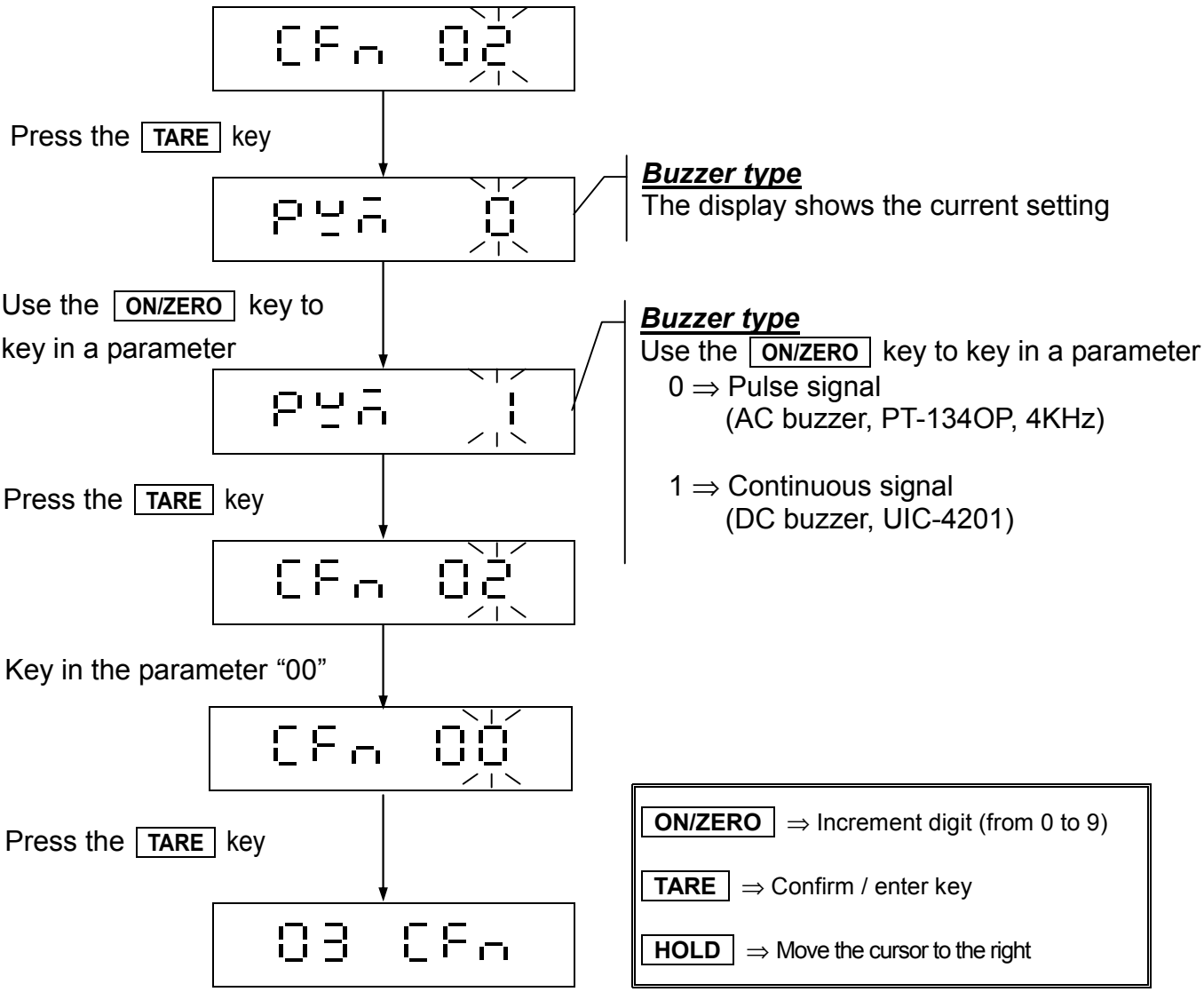
00 ⇒ No limitation
01 ⇒ ±1%
02 ⇒ ±2%
⋮
50 ⇒ ±50%

ON/ZERO ⇒ Increment digit (from 0 to 9)

TARE ⇒ Confirm / enter key

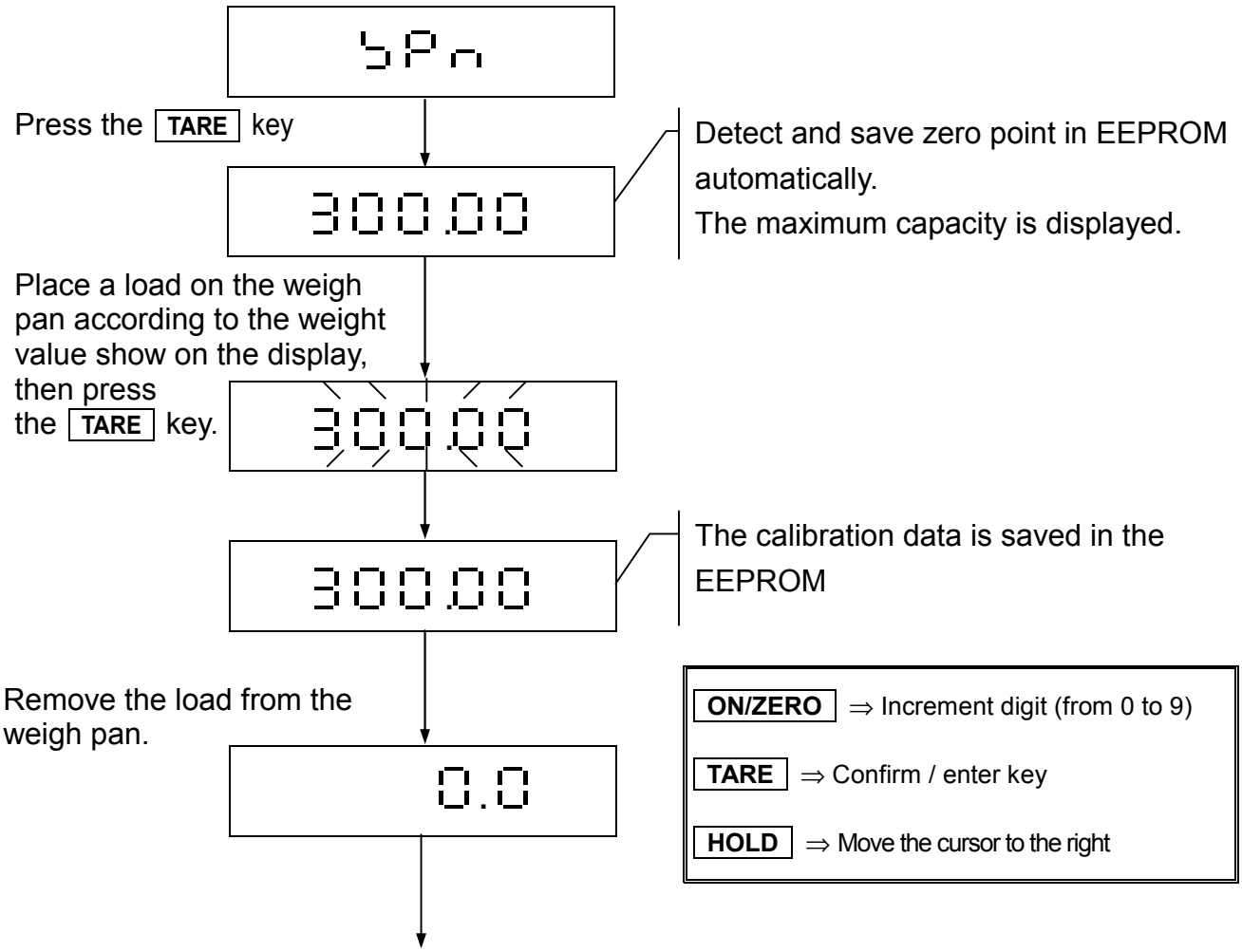
HOLD ⇒ Move the cursor to the right

4-3-2 Buzzer Type CFn 02



4-4.Span Calibration SPn

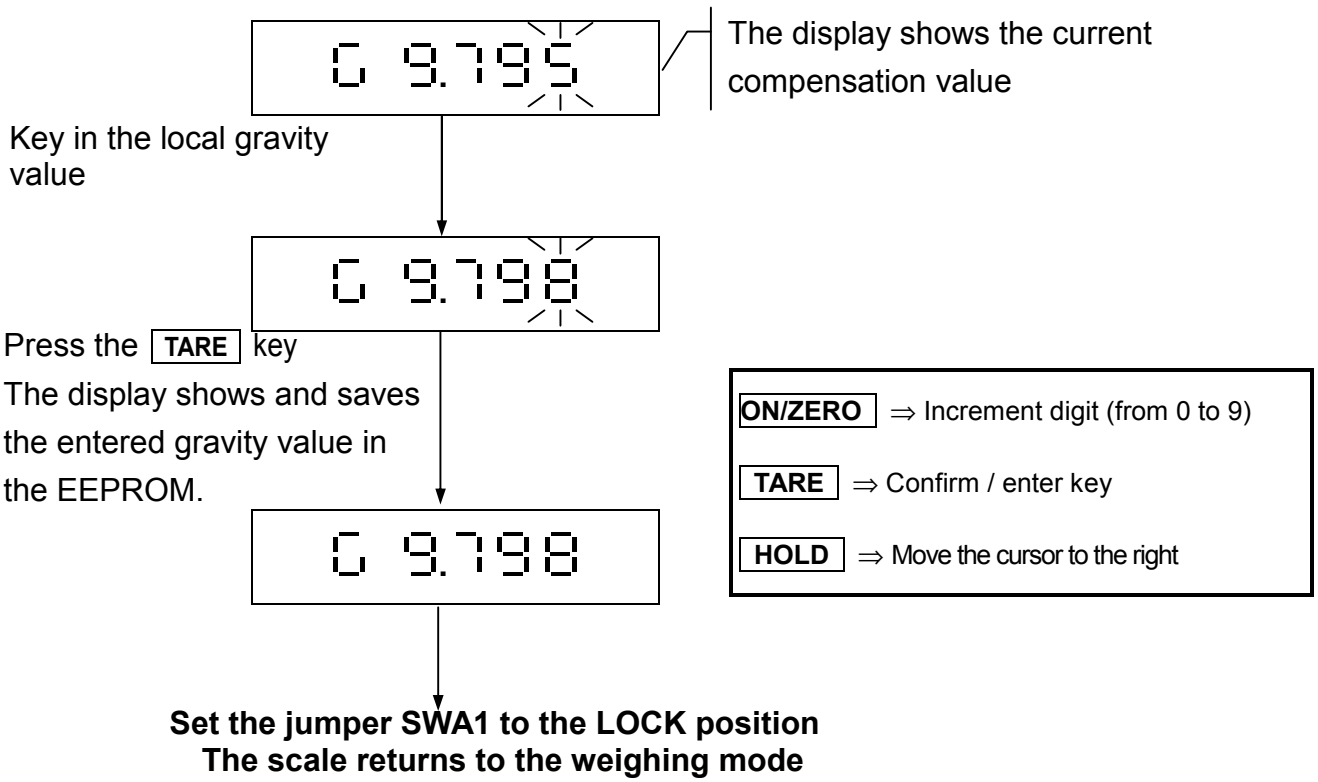
- Set the jumper SWA1 on the main board to the ADJ position (EEPROM UNLOCKED). Press the **ON/ZERO** key to enter the SPAN calibration mode; the display shows SPn .
- Set the jumper SWA1 back to the LOCK position, after completing the calibration.
- If the jumper SWA1 is set back to the LOCK position during calibration, the scale exits the service mode automatically.



Set the jumper SWA1 to the LOCK position.
The scale returns to the weighing mode.

4-5.Gravity Compensation

Set the jumper SWA1 on the main board to the ADJ position. Press the **ON/ZERO** key to switch on the scale, and press the **ON/ZERO** key again before the display resets back to zero. The scale enters the gravity compensation mode.



- The gravity value must lie between those at the Equator and the Polar Regions.

  Gravity value at the equator G_E = 9.7803184558 m/sec^2

  Gravity value at the polar region G_P = 9.8321772792 m/sec^2

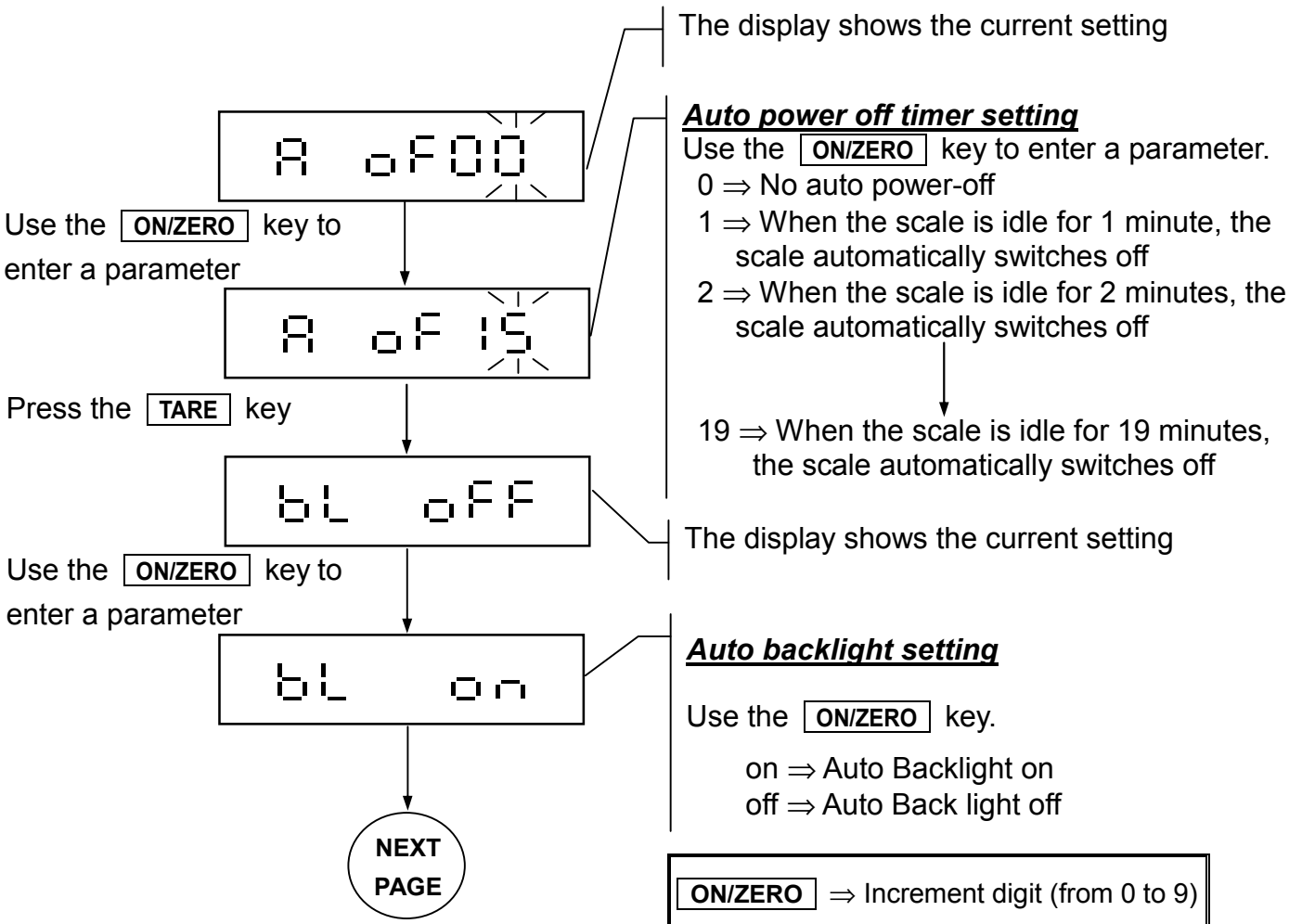
  Taipei: 9.78914 m/sec^2 Shanghai: 9.79585 m/sec^2

- The display shows error message Err G, when the gravity value is NOT within the range (9.829 > gravity >9.772).

CHAPTER 5 ADVANCED FUNCTIONS

5-1. Auto Power off and Backlight Settings

Switch on the scale, press the **ON/ZERO** and the **HOLD** keys together to enter the advanced function settings mode. The display shows A oF00 。



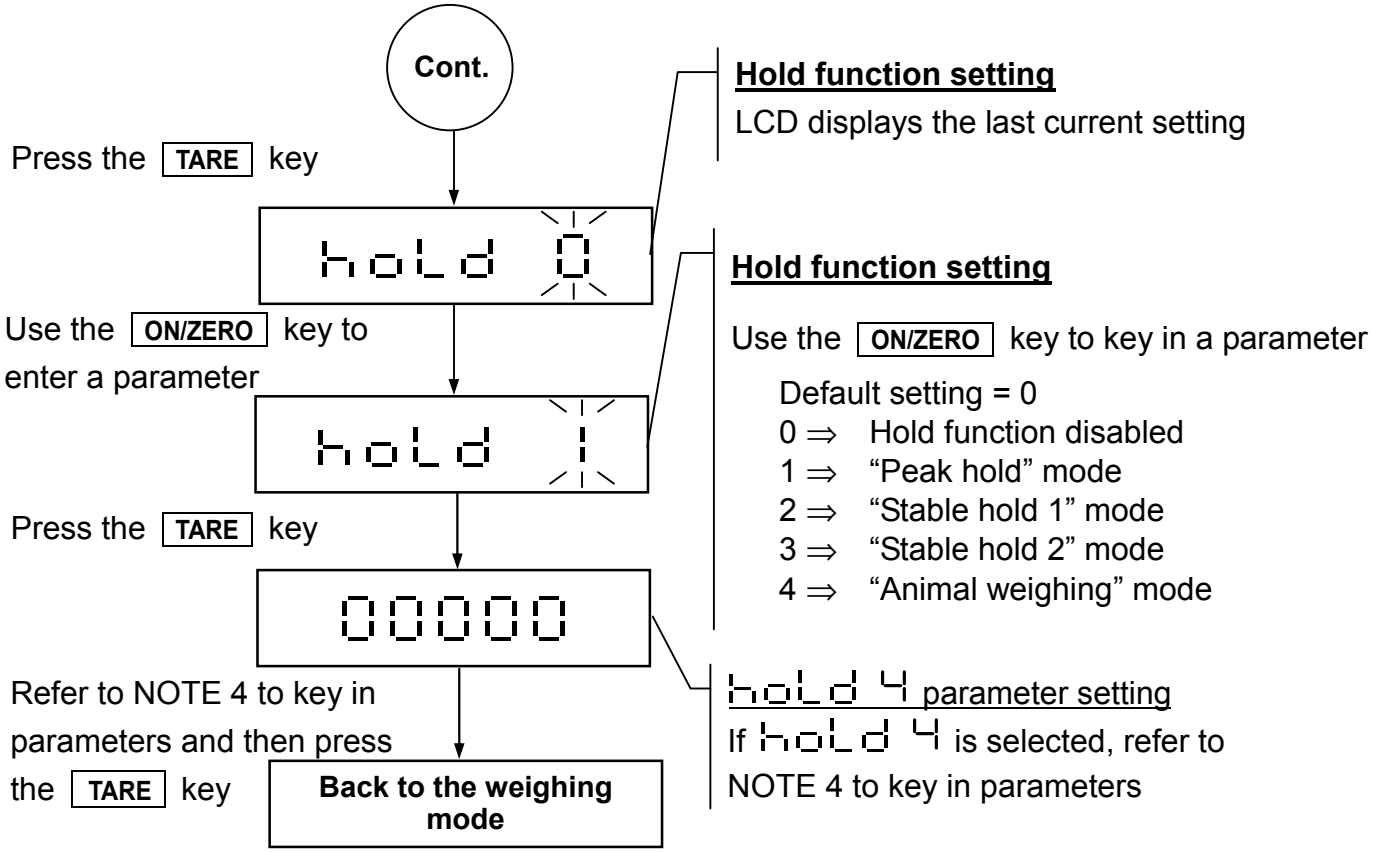
Automatic Power-off Function

When the weight on weigh pan is less than 10d or remains steady for the set time, the scale will automatically switch off.

- Automatic power-off is not functional when using an ac adaptor as the power source. Therefore, auto power-off is active **ONLY** when using dry batteries as the power source.

Auto Backlight Function

When the weight is over 10d, the backlight is on. After the weight is stable for 10 seconds or when the scale returns to zero, the backlight switches off.



hold 0 = Hold function disabled.

hold 1 = **"Peak hold" mode** (active when the weight on platter is over 10d)
The scale shows the maximum weight value detected from the continuously changing weight values. Press any key to exit the hold function.

hold 2 = **"Stable hold" mode 1** (active when the weight on platter is over 10d)
When the scale becomes stable, the display shows the current weight value. Press any key to exit the hold function.

hold 3 = **"Stable hold" mode 2** active when the weight on platter is over 10d)
When the scale becomes stable, the display shows the current weight value. Re-zero the scale (weight below 10d) to exit the hold function.

hold 4 = **"Animal Weighing " mode** (active when the weight on platter is over 10d)
Refer to NOTE4 to key in the stabilization range and timer parameters. When the scale becomes stable, the display shows the current weight value. Re-zero the scale (weight below 10d) to exit the hold function.

NOTE 4 HoLd 4 parameter setting (Animal Weighing mode)

(a) ⇒ Parameters 0~4 to set the stabilization timer

0: 0.5 second

1: 1 second

2: 2 seconds (default setting)

3: 4 seconds

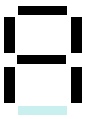
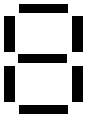
4: 8 seconds

(b) (c) (d) (e) ⇒ Dynamic stabilization range setting: 0 ~ 100% (pre-set as 5%)

Example: To set the stabilization timer as 4 seconds and the range as 1.5%, key in 30015.

APPENDIX

7 SEGMENT DISPLAY CHARACTERS:

Digit	7 segments letter	Alphabet	7 segments letter	Alphabet	7 segments letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z